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Addition to the Ephemeris for Physical Observations of Jupiter.
On the Motion of the White Spot. By A. Marth, Esq.

Next to the great reddish spot, of which observations have been made since the autumn of 1878, the small white spot, a little south of *Jupiter's* equator, which seems to have first attracted attention in the autumn of 1880, promises, by its long continued visibility, to be of special service in the study of the changes which are going on upon the surface of *Jupiter*. The variations in the rate of motion and in the brightness of the spot render careful and assiduously continued observations of its position and of its appearance essential for any further investigations. In order to enable readers to see how far the known observations of the spot can be represented on the assumption of regular motion, I give a list of all the observed passages of the spot across the middle of the disk, which have come to my knowledge, together with the corresponding longitudes in a system in which the daily rate of rotation is assumed to be $=878^{\circ}.46$. These longitudes are connected with the system of longitudes adopted in the ephemeris by the equation

$$\text{Corresponding long.} = \text{Long. of } 4 \text{'s Central Meridian} + \text{Corr. for phase} \\ + 336^{\circ}.0 + 8^{\circ}.04 (t - t_0),$$

in which t is the time of the observed passage, and $t_0 = \text{Aug.}^{\text{th}} 2, 1882, 0^{\text{h}} \text{ Gr.}$ The period of rotation corresponding to the daily rate $878^{\circ}.46$ is $9^{\text{h}} 50^{\text{m}} 7^{\text{s}}.42$, while that corresponding to the assumed rate of rotation of the First Meridian is $9^{\text{h}} 55^{\text{m}} 34^{\text{s}}.47$.

The history of the development of the spot before Oct. 16,

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1880, requires clearing up, and I must leave it, for the present, an open question whether the earlier observations refer really to the same object. The observations of Kortazzi are found in the *Bulletin de l'Acad. de St.-Petersbourg*, tome 27, p. 142, those of Schmidt in No. 2353 of the *Astron. Nachrichten*; the others are taken from papers in the *Monthly Notices*, letters in the *English Mechanic*, or from private communications. The places of observing and the apertures of the instruments employed are:—

Barnard; Nashville, Tennessee; 5 in. refractor.

Corder; Writtle, near Chelmsford; 4·5 in. reflector.

Dennett; Southampton; 9·5 in. reflector.

Denning; Bristol; 10 in. reflector.

Kortazzi; Nicolajew; 6·5 in. refractor.

McCance; Putney; 10 in. reflector.

Schmidt; Athens; 6·5 in. dialyt.

A. S. Williams; West Brighton; 5·2 in. reflector and 2·7 in. refractor.

In the case of Schmidt's observations, two values of the resulting longitudes are given, the first corresponding to the time of the observed passage as directly observed, the second to the time after applying the correction which Schmidt himself has deduced, and about which I must content myself with referring to his paper. The abbreviations are: Ath. Athens, Gr. Greenwich, Nic. Nicolajew, b. bright, f. faint, v. very.

Observed Time of Passage.				Observer.	Corr. Long.	
1880, Aug. 27	11 18·7	Nic.		Kortazzi	17 ⁰ ·7	
Sept. 5	11 34·0	"		"	14·2	
7	12 43·1	"		"	13·6	
16	13 0·5	"		"	11·4	
18	11 50	Gr. vb		Denning	3·7	
21	10 58·1	Nic.		Kortazzi	9·8	
Oct. 16	10 51·4	Ath.		Schmidt	30·6	30·3
18	12 2·3	"		"	31·0	29·9
19	7 36·8	"		"	27·7	27·3
20	11 38	Gr. vb		Denning	31·2	
21	8 46·6	Ath.		Schmidt	27·3	27·2
23	9 52·8	"		"	24·8	24·7
28	7 56·1	"		"	26·3	26·2
29	11 53·3	Gr.		Williams	27·4	
30	7 25	"		Corder	22·3	
30	7 28	" vb		Denning	24·1	
30	9 4·6	Ath.		Schmidt	25·1	25·1

Observed Time of Passage.				Observer.	Corr. Long.	
1880, Nov.	2	14 15	Gr.	b	Denning	28°0
	3	9 47	"	b	"	23°0
	4	5 25	"	b	"	21°6
	4	7 3°0	Ath.		Schmidt	23°5 23°3
	6	8 12°0	"		"	22°6 22°6
	8	7 48	Gr.		Denning	22°8
	8	9 23°4	Ath.		Schmidt	23°2 22°8
	9	5 4°9	"		"	23°9 22°8
	11	6 20°1	"		"	26°8 26°5
	12	11 54°6	"		"	29°3 25°9
	15	8 38°6	"		"	24°1 23°9
	17	8 14	Gr.		Denning	24°9
	17	8 15	"		Corder	25°5
	17	8 15	"		Williams	25°5
	17	8 15°5	"		Dennett	25°8
	17	9 52°0	Ath.		Schmidt	26°8 25°7
	19	9 20	Gr.		Corder	22°1
	19	9 23	"	vb	Denning	23°9
	19	9 26°5	"		Dennett	25°8
	19	9 28	"		McCance	27°0
	20	5 0	"		Corder	21°9
	20	5 2	"	vb	Denning	23°1
	21	10 35	"		McCance	24°7
	21	10 41	"	b	Denning	28°4
	22	6 15	"		McCance	30°6
	22	6 18	"		Corder	32°4
	22	16 4°2	"		Barnard	23°9
	26	8 40	"		McCance	26°6
	26	8 44	"	vf	Denning	29°1
	27	4 19	"	vb	"	25°8
	27	4 21	"		Williams	27°1
	28	9 51	"	vb	Denning	26°8
	29	5 27	"	vb	"	24°1
Dec.	2	12 14°0	"		Barnard	27°6
	3	7 54	"	f	Denning	27°4
	6	14 36°2	"		Barnard	27°8
	10	7 14	"	vb	Denning	31°5
	12	8 27	"	vb	"	32°8
	15	5 16	"	vb	"	31°3

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Observed Time of Passage.				Observer.	Corr. Long.
1880, Dec.	21	8 48	Gr.	McCance	30°6
	21	8 49	"	Denning	31°2
	23	10 4	" vb	"	33°6
	24	5 36.5	"	McCance	28°7
	25	11 17	"	Williams	34°7
	28	7 59	" vb	Denning	28°8
	30	9 11	"	McCance	29°4
	30	9 15	" vb	Denning	31°8
	31	4 47	"	McCance	27°6
1881, Jan.	6	8 26.5	"	"	30°2
	6	8 27	" b	Denning	30°5
	7	4 5	" f	"	29°0
	7	4 6	"	McCance	29°6
	13	7 37	" vvb	Denning	27°8
	15	8 53	"	Williams	30°7
	16	4 28	" vb	Denning	27°4
Feb.	23	7 5	" f	"	15°6
July	10	14 45	" vb	"	16°4
	17	13 56	" vb	"	15°0
	24	13 7	" vf	"	13°8
	26	14 19	" b	"	14°5
Aug.	2	13 36	" b	"	17°1
	4	14 47	" b	"	17°2
	8	17 8	" f	"	16°9
	17	17 31	" vb	"	16°9
	18	13 12	" b	"	17°2
	27	13 33	" vvb	"	16°3
Sept.	1	11 38	" f	"	18°6
	7	15 13	" f	"	20°7
	9	16 26	"	Williams	22°3
	15	10 10:	" f	Denning	23°9
	15	10 10.5	"	Williams	24°3
	16	15 33	"	"	19°5
	19	12 9	" vvb	Denning	16°8
	21	13 30	" vvb	"	17°2
	25	15 46	"	Williams	14°3
	26	11 26.5	"	"	14°6
	27	16 46	"	"	8°0
	28	12 40	" b	Denning	16°5

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Observed Time of Passage.				Observer.	Corr. Long.
1881, Sept.	30	13 52	Gr.	vf	Denning 17°5
Oct.	3	10 49	"	vvf	" 21°6
	5	12 3	"	vb	" 23°9
	11	15 36	"		Williams 25°3
	17	9 13	"	vb	Denning 29°1
	25	13 58	"	vb	" 25°7
	25	13 58.5	"		Williams 26°0
	26	9 36	"		" 24°5
	28	10 44	"		Denning 23°2
	30	11 52.5	"		Williams 22°2
	30	11 54	"	vb	Denning 23°1
Nov.	6	11 6	"		Williams 24°0
	7	16 37	"		" 24°5
	14	5 56	"	b	Denning 23°6
	15	11 32	"	vb	" 27°2
	22	10 44	"	f	" 28°0
	22	10 47.5	"	vf	Williams 30°1
	23	6 25	"	vf	Denning 28°5
	23	6 26	"	vf	Williams 29°2
	23	16 16	"	vf	Denning 29°1
	27	8 45	"	b	" 28°2
	27	8 55	"		Corder 34°3
	28	4 27	"	vb	Denning 29°4
	28	14 18	"	b	Williams 29°9
	29	9 52	"	v vb	Denning 26°2
	29	9 54.5	"	b	Williams 27°7
Dec.	1	11 55	"	b	" 28°4
	2	6 44	"	v vb	Denning 27°2
	3	12 14	"	v vb	" 27°0
	7	4 41	"	v vb	" 24°7
	7	4 45	"		Corder 27°1
	7	14 33	"	vb	Denning 25°8
	8	10 20	"		Corder 30°0
	10	11 26	"	vb	Denning 27°3
	12	12 30	"		Williams 23°4
	13	8 12	"	v vb	Denning 24°5
	13	8 12	"	vf	Williams 24°5
	18	6 12	"	b	Denning 23°7
	20	7 26	"	b	" 25°7

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Observed Time of Passage.				Observer.	Corr. Long.
1881, Dec.	21	12 54	Gr. b	Williams	24°3
	22	8 33	" vvb	Denning	23°5
	23	4 11	" vvb	"	22°2
	24	9 43	" vb	"	23°2
	24	9 44	" vf	Williams	23°8
	29	7 50	"	Corder	26°4
1882, Jan.	3	5 44	" vf	Denning	21°6
	5	7 5	" vvf	"	27°8
	6	12 34	" vvf	"	26°9
	7	8 13	" f	"	26°1
	9	9 27	" b	"	28°0
	10	5 8	" vb	"	28°4
	13	11 52	" vvb	"	29°9
	16	8 42	" vvb	"	29°1
	21	6 38	" b	"	25°2
Feb.	1	8 22	" f	"	30°2
	3	9 32	" vb	Williams	29°5
	8	7 38	" f	Denning	31°4
	10	8 50	" b	Williams	31°9
	12	10 0	" f	Denning	31°1
	13	5 43	" f	"	32°4
	17	8 7	" vf	"	33°5
	19	9 23	" vvf	"	36°5
	19	9 23	" vf	Williams	36°5
	21	10 33	" f	Denning	35°6
	26	8 34	" vvb	"	34°3
Mar.	3	6 30	" vvb	"	29°9
	12	6 59	" vvb	"	31°7
	14	8 5	" b	"	28°4
	14	8 12	" vvb	Williams	32°6
	16	9 19	" vvb	Denning	29°9
	16	9 21	" b	Williams	31°1
	30	7 41	" vf	Denning	25°5
Apr.	6	7 1	" vvb	"	28°3
	8	8 12	" b	"	28°0
July	29	15 49	" vb	"	29°8
Aug.	5	15 4	" vb	"	30°8
	7	16 9	" vb	"	27°1

In case the white spot should remain visible and keep approxi-

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mately its mean rate of motion, it may be looked for near the central meridian at the times which follow or precede the predicted passages of the First Meridian, given on pp. 391-95, by the interval indicated in the following table:—

1882.			1883.			h		
Aug. 26	Oct. 10	Nov. 24	Jan. 7	Feb. 21	Apr. 7	6	after F. Mer.	
30	14	28	12	26	11	5	„	„
Sept. 4	19	Dec. 3	16	Mar. 2	16	4	„	„
9	23	7	21	7	20	3	„	„
13	28	12	25	11	25	2	„	„
18	Nov. 1	16	30	16	29	1	„	„
22	6	21	Feb. 3	20	May 4	0	„	„
27	10	25	8	25	9	1	before	„
Oct. 1	15	30	12	29	13	2	„	„
6	19	Jan. 3	17	Apr. 3	18	3	„	„
10	24	8	21	7	22	4	„	„
15	28	12	26	12	27	5	„	„

Cannot some of the many possessors of sufficiently powerful telescopes be induced to take part in the interesting observations of *Jupiter's* spots?

Ephemerides of the Satellites of Saturn, December 1882, to March 1883. By A. Marth, Esq.

The following ephemerides of the five inner satellites are a continuation of those published in the last number of the *Monthly Notices*, so that it will be sufficient to refer to the explanations there given.

The ascending node N and inclination J of the plane of the ring in reference to the plane of the Earth's equator are here assumed to be

1882, Nov. 30	N = 126°4545	J = 7°0148
Dec. 30	4590	0144
1883, Jan. 29	4621	0140
Feb. 28	4639	0136
Mar 30	126°4661	7°0134